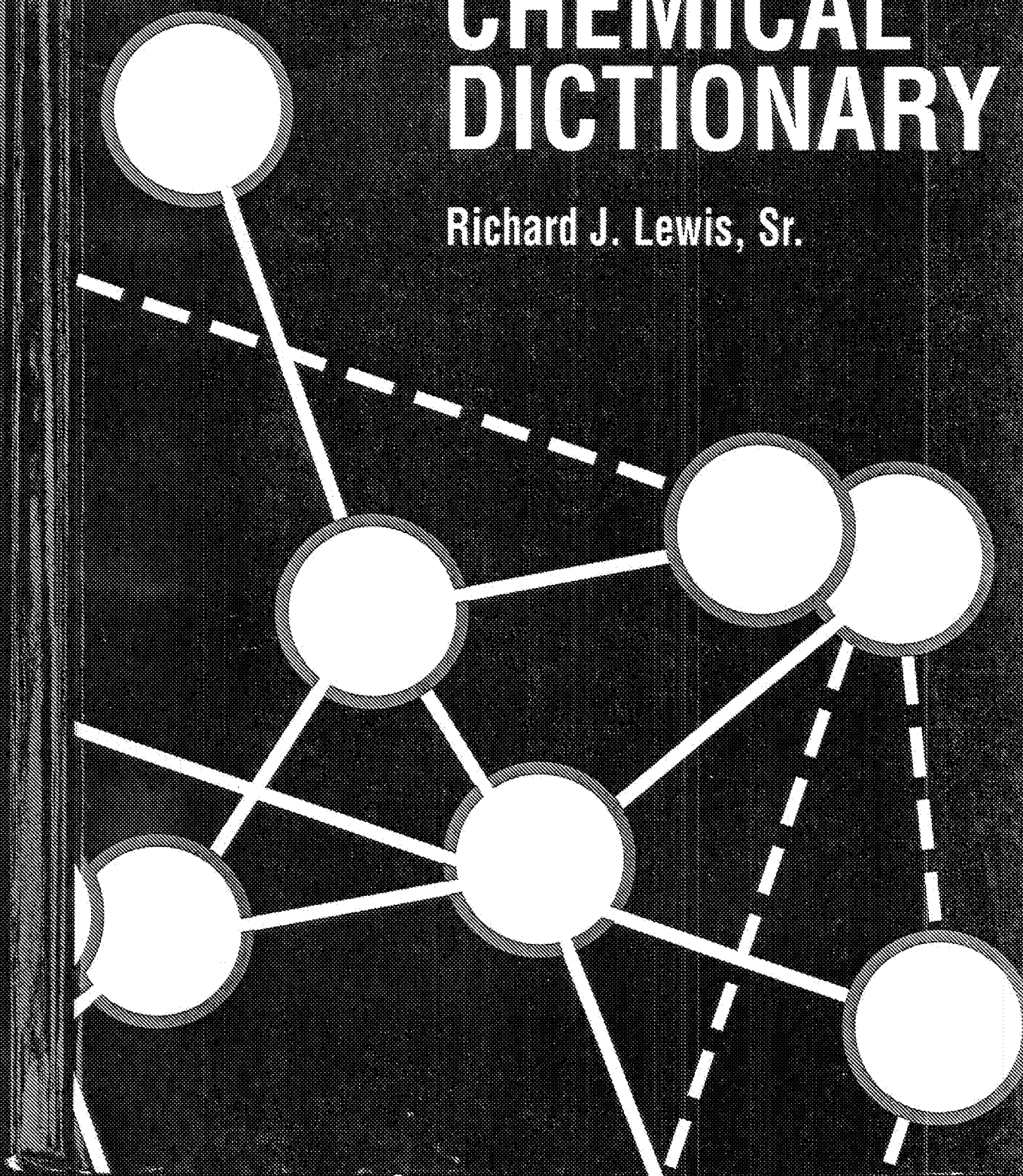


EXHIBIT I

Twelfth Edition

Hawley's
**CONDENSED
CHEMICAL
DICTIONARY**

Richard J. Lewis, Sr.



Hawley's
Condensed Chemical
Dictionary

TWELFTH EDITION

Revised by
Richard J. Lewis, Sr.



VAN NOSTRAND REINHOLD COMPANY
New York

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CIP

of ethylene manu-
of benzene by the

ctane gasoline ob-
ine by heating the
or by passing the
dyst.
ne produced from
out use of cracking
processes. Its oc-

gasoline especially
its; it is uncracked
last oxidation to
usually not colored
ades. It also serves
d portable stoves.
dangerous fire and

of dicyanopyra-
molecules of an
produced by treat-
yl ketone bisulfite
cyanide, heating in
tion.

drochloric acid and
the stomach in re-
ve reflex. Its pH is
stabolic breakdown
tial to the digestive
te decomposition is

ction mold leading
the mold cavity; the
material removed
product is ejected.

s Preparation of
mol ethers or of het-
atment of the aro-
gen cyanide and hy-
ence of Lewis acid

Formylation of ben-
cyclic aromatic hy-
onoxide and hydro-
ence of aluminum
Addition of cuprous
to proceed at atmo-

asuring and indicat-
as pressure (hydrau-
thickness, vacuum,

etc. The many types of gauges are activated by
mechanical, ultrasonic, electronic, magnetic,
and pneumatic means. Some operate on the
principle of automatic control. In materials
technology, the term "gauge" is often synony-
mous with thickness, especially in the metals,
rubber, and plastics fields. Light-gauge refers to
thicknesses from about 0.005-0.05 inch, and
heavy gauge to thicknesses from about 0.05-
0.150 inch.

See also mil, meter (2).

Gay-Lussac, Joseph Louis. (1778-1850). French
chemist and physicist noted for the brilliance
and accuracy of his reasoning and experimental
work. He contributed greatly to the knowledge
of gases in his discovery (1808) of the law of
combining volumes and his independent discov-
ery (1802) of the law of Charles, the relationship
of temperature to the volume of gases. He grad-
uated from and taught at the Ecole Poly-
technique, becoming a full professor in 1810.
His work in chemistry was extensive, resulting in
the discovery of boron, which he named, with
Louis-Jacques Thenard, and a variety of com-
pounds such as boron trifluoride, chloric acid,
and dithionic acid ($H_2S_2O_6$). He identified io-
dine as an element, named it, and studied its
properties. He investigated the relationship of
acids and bases and introduced many analytical
techniques (such as the use of litmus as an indi-
cator). Among his many contributions to indus-
trial chemistry were improvements in the pro-
duction of sulfuric acid. Much of the progress of
chemistry in the early 19th century is associated
with his career.

Gay-Lussac's law. A modification of Charles'
law to state the following: At constant pressure
the volume of a confined gas is proportional to
its absolute temperature. The volumes of gases
involved in a chemical change can always be rep-
resented by the ratio of small whole numbers.

GC. Abbreviation for gas chromatography.

Gd. Symbol for gadolinium.

GDME. Abbreviation for glycol dimethyl ether.
See ethylene glycol dimethyl ether.

GDP. Abbreviation for guanosine diphosphate.
See guanosine phosphates.

Ge. Symbol for germanium.

gel. A colloid in which the disperse phase has
combined with the continuous phase to produce
a viscous jelly-like product. Only 2% gelatin in
water forms a stiff gel. A gel is made by cooling
a solution, whereupon certain kinds of solutes

(gelatin) form submicroscopic crystalline parti-
cle groups which retain much solvent in the in-
terstices (so-called "brush-heap" structure).
Gels are usually transparent, but may become
opalescent.

See also pectin.

gelatin. A mixture of proteins obtained by hy-
drolysis of collagen by boiling skin, ligaments,
tendons, etc. Its production differs from that of
animal glue in that the raw materials are se-
lected, cleaned, and treated with special care so
that the product is cleaner and purer than glue.
Type A gelatin is obtained from acid-treated raw
materials, and type B from alkali-treated raw
materials. Gelatin is strongly hydrophilic, ab-
sorbing up to 10 times its weight of water and
forming reversible gels of high strength and vis-
cosity. It can be chemically modified to make it
insoluble in water for such special applications
as microencapsulation of fish nutrients for fish
culture.

Properties: Flakes or powder, odorless, tasteless,
soluble in warm water and glycerol; insoluble in
organic solvents.

Grade: Edible, photographic, technical, USP.

Use: Photographic film; sizing; textile and paper
adhesives; cements; capsules for medicinals;
matches; light filters; clarifying agent; desserts,
jellies, etc. culture medium for bacteria; blood
plasma volume expander; microencapsulation;
printing inks; nutrient; protective colloid in ice
cream.

gelatin dynamite. A high explosive which con-
tains nitrocellulose in addition to nitroglycerin.
The product is a gelatinized mass, less sensitive
to shock and friction than straight dynamite.

gel filtration. A type of fractionation procedure
in which molecules are separated from each
other according to differences in size and shape;
the action is similar to that of molecular sieves.
Dextran gels (3-dimensional networks of poly-
saccharide chains) are usually used in this
method known as gel filtration chromatogra-
phy.

See also fractionation, molecular sieve.

"Gelgard" [Dow]. TM for a synthetic poly-
meric water-gelling material.

Use: Fire control.

gelled hydrogen. Liquid hydrogen thickened
with silica powder.

Use: Rocket fuel.

gel paint. (thixotropic paint). A paint formula-
tion which has a semi-solid or gel consistency
when undisturbed, but which flows readily
under the brush or when stirred or shaken. After